

## **Dissecting the North Pacific Ocean Topography with Past ENSO Events**

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It has been suggested that the effects of ENSO (El Nino-Southern Oscillation) originated in the tropical Pacific are able to propagate to mid and high latitudes and influence extratropical weather and climate years after the original ENSO events. The eight-year record (1993-2000) of ocean topography from the TOPEX/Poseidon Mission provides an opportunity to examine this process. The perturbations in the tropics caused by ENSO first propagate to higher latitudes along the west coast of the Americas. The resulting coastal perturbations then provide a source of baroclinic Rossby waves travelling westward into the North Pacific. By tracing the patterns of propagation originated at the ocean's eastern boundary, the origins of many features of the present ocean topography anomalies can be identified with past ENSO events. Remnants of the 1992-93 warm event are responsible for the high elevations in the northwest Pacific (north of 40 N). A combination of the mild cold events of 1994 and 1996 caused the low elevations to the east of the aforementioned highs. The warm event of 1994-95 created two tracks of high elevations centered along 35 N and 18 N. The strong warm event of 1997-98 has surprisingly small effects north of 20 N. However, the effects of the strong cold event of 1998-99 are felt everywhere in the southeast part of the North Pacific (south of 40 N, east of the dateline). These patterns of evidence of the long-term effects of ENSO on the circulation of the North Pacific provide a basis for the prediction of decadal variability of the North Pacific.